

AEROBIC FITNESS

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♥ What is Aerobic Fitness?

Aerobic fitness, commonly referred to as cardio-respiratory endurance, is the capacity of the body to continue physical activity for prolonged periods. It is considered by most physiologists to be the most important component of one's total fitness.

The ability of the body to consume oxygen at very high rates, deliver the oxygen efficiently to the working musculature, and a high capacity of the cells to utilize the oxygen depict aerobic fitness.

Quick recovery upon cessation of activity is an indication of this component of fitness. Another sign is an adjustment to the increased intensity of exercise without undue breathlessness or feelings of distress, fatigue and pain.



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♥ Aerobic Vs. Muscular Endurance

Aerobic endurance should not be confused with muscular endurance. It refers to the efficiency of the respiratory system in taking in oxygen, the cardiovascular system in delivering it to the active musculature, and the skeletal muscle system in utilizing it.



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On the other hand, muscular endurance refers to the capacity of just the musculature to continue an activity over a period of time (eg. continuous push-ups, sit-ups, etc). Certain energy stores in the muscle themselves as opposed to cardio-respiratory factors limit one's muscular endurance.



♥ Aerobics Vs. Anaerobics

Since aerobic fitness has been termed cardio-respiratory endurance, aerobics would refer to those activities that place a reasonable amount of stress on these systems. According to Dr. Ken Cooper, a well known fitness expert, aerobics literally means "with oxygen". Aerobic activities are ones which can be continued for long periods, and utilize large quantities of oxygen. Examples of aerobic activities are jogging, swimming, walking, skipping, snow-shoeing, skating, and cross-country skiing.

In general, however, aerobic exercise should not be so intense that the body is unable to receive sufficient oxygen. Sprinting as an example of anaerobics (without oxygen) is so demanding that the body cannot possibly be supplied with sufficient oxygen. An oxygen debt is created with short bursts of high intensity activities.

Because of the high intensity that typifies anaerobics, it can be quite harmful if undertaken by an unhealthy or sedentary individual. One should concentrate on aerobics to improve that vital cardio-respiratory endurance.

♥ How To Measure Aerobic Fitness

Several tests have been used to measure one's cardio-respiratory endurance or aerobic fitness. The laboratory treadmill test involving sophisticated equipment has been used to directly measure the subject's maximum oxygen consumption (VO_2max) in ml/kg/min. which has been the traditional index of aerobic fitness. The higher the VO_2max a subject has, the greater his capacity to continue physical activity for prolonged periods of time.

Various indirect tests involving sub-maximal workloads can be used as well to predict VO_2max and therefore, determine aerobic fitness. Cooper's 12 min. Test, and Astrand-Rhyming's test are examples of sub-maximal predictive tests. In such

tests, heart rate response during or following exercise is used to predict VO_2max .

The Canadian Home Fitness Test is another test which predicts aerobic capacity based on heart rate response immediately following exercise. Its major advantage, besides its sub-maximal workload and simplicity, is that it can be conducted at home.

♥ Aerobic Training Effects

Several training effects produced by regular aerobic exercise have been well researched:

- Cardiac hypertrophy (heart enlargement), resulting in a stronger and more efficient pump for the cardio-respiratory system.
- Increased strength of respiratory muscles producing more usable lung space
- Increased blood volume, number, and pliability of blood vessels, improving the blood supply to body tissues
- Increased oxidative capacity of muscles resulting in better utilization of oxygen

In addition various psychological effects such as improved self-image and reduced emotional stress can result from regular aerobic activity.

♥ Preventive Medicine

The increase in the incidence of coronary heart disease is known to be due to obstructions in the arterial vessels. There are two ways in which aerobics can prevent such disease, namely, by increasing the number of vessels servicing the heart, and by reducing the factors responsible for the occlusion.

Obesity has been considered by life insurance companies as an added health risk. Death rates from numerous diseases are greater in obese individuals and vary according to the degree of obesity. For obesity to be reduced, energy



expenditure must exceed energy intake. A combination of a well-balanced calorie restricted diet plus an increase in physical activity levels is the most efficient means of reaching realistic weight goals.

Hypertension (high blood pressure) is another factor increasing the risk of coronary heart disease. Several surveys have shown that hypertension occurs less often and later in life among the most active subjects.

♥ How To Get Started

It is generally agreed upon by most physiologists that aerobic exercise must be performed regularly at an intensity range of approximately 60-80% of your VO_2max to produce the desired training effects. Exercising at lower intensities requires a longer duration to produce the same results. Based on this criteria, one needs to know his/her VO_2max and be able to relate it to performance criteria (speed, distance, etc.) in an aerobic activity. The Canadian Home Fitness Test provides you with this information.

A complete warm-up involving rhythmical and relaxed activities (walking, arm circling, etc.) to stimulate circulation and raise the body temperature, and static stretching exercises to prevent muscle soreness or injury during peak exercise, should always be undertaken.

The minimum exercise requirement to show a significant increase in aerobic fitness is 3 times per week for 30 minutes/session. A warm-up and cool-down period should accompany each session. The exercising should be continuous and the intensity should increase from week to week. Studies have shown that training effects start reversing themselves after two days of exercising.

Remember when choosing your aerobic activity, whether it be running, skating, cross-country skiing or just walking, that it fulfills 3 criteria: it can be done regularly, it is continuous, and most important, it is fun.